

8.3 Area of Squares and Rectangles

8.4 Area of Triangles

Formulas

Area of Square =

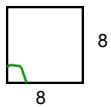
$$s^2$$


Area of a Rectangle =

$$bh$$


Area of a Triangle =

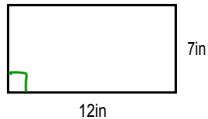
$$\frac{1}{2}bh$$

$$A = 8^2 = 64 \text{ units}^2$$

gsp1

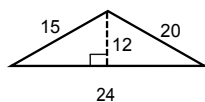
gsp



$$A = bh$$

$$7 \cdot 12$$

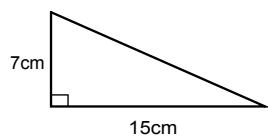
$$84 \text{ in}^2$$



$$A = \frac{1}{2}bh$$

$$\frac{1}{2}12 \cdot 24$$

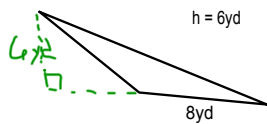
$$A = 144 \text{ units}^2$$



$$A = \frac{1}{2}bh$$

$$\frac{1}{2}7 \cdot 15$$

$$A = 52.5 \text{ cm}^2$$

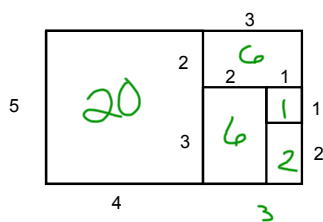


$$A = \frac{1}{2}bh$$

$$\frac{1}{2}8 \cdot 6$$

$$24 \text{ yd}^2$$

Find the area of each rectangle.



$$35$$

What is the area of the picture?

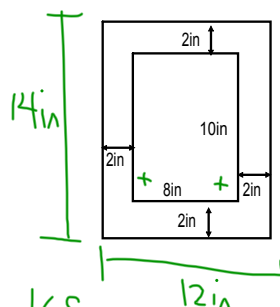
$$A = 8 \cdot 10 = 80 \text{ in}^2$$

What is the area of the frame?

Area large rect.
- Area of picture

$$A = 14 \cdot 12$$

$$168 \text{ in}^2$$



$$168$$

$$- 80$$

$$88 \text{ in}^2$$

$$\text{Area} = 49\text{cm}^2$$

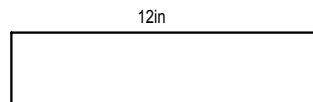
$$\text{side} = 7\text{cm}$$



$$A = s^2$$

$$\sqrt{49} = \sqrt{s^2}$$

$$7 = s$$



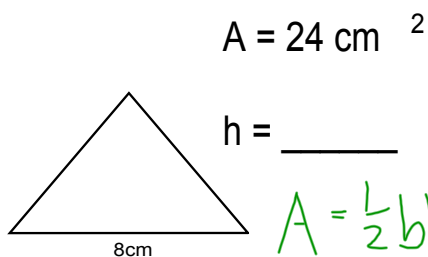
$$\text{Area} = 36\text{in}^2$$

$$\text{height} = 3\text{in}$$

$$A = bh$$

$$36 = 12 \cdot h$$

$$3 = h$$



$$A = 24\text{cm}^2$$

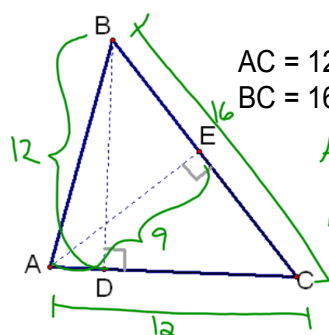
$$h = \underline{\hspace{2cm}}$$

$$A = \frac{1}{2}bh$$

$$24 = \frac{1}{2} \cdot 8h$$

$$24 = 4h$$

$$6\text{cm} = h$$



$$AC = 12$$

$$BC = 16$$

$$BD = 12$$

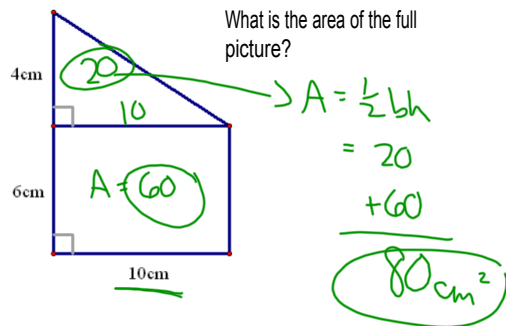
$$AE = 9$$

$$A = \frac{1}{2} \cdot 12 \cdot 12 = 72$$

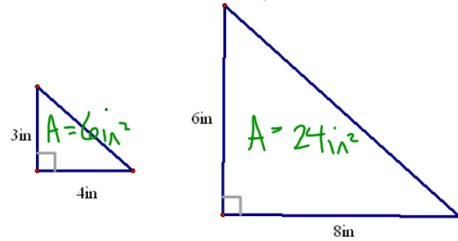
$$A = \frac{1}{2} \cdot 16 \cdot 9 = 72$$

Which is the base?
Which is the height?

$$\left. \begin{array}{l} AC \\ BD \end{array} \right\} \left. \begin{array}{l} BC \\ AE \end{array} \right\}$$



Find the area of each triangle.



Are the triangles similar?

What is the scale factor?

What is the ratio of the areas?

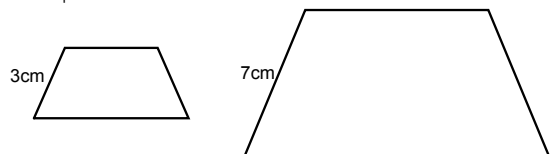
Yes
 $3:6 \rightarrow 1:2$
 $6:24 \rightarrow 1:4$

Theorem 8.3

Areas of Similar Polygons

Two similar polygons with a scale factor of $a:b$,
 have a ratio of areas of $a^2:b^2$.

The trapezoids are similar.



What is the scale factor?

3:7

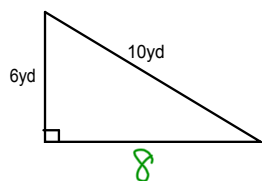
What is the ratio of the areas?

9:49

Challenge:

$$24\text{yd}^2$$

Find the area of the right triangle.



$$c^2 = a^2 + b^2$$

$$10^2 = 6^2 + b^2$$

$$100 = 36 + b^2$$

$$64 = b^2$$

$$8 = b$$

HW

p427-428 #s 8-22

p434-435 #s 1, 5-13, 16-18, 23, 26

Attachments

8_3_4notes_tri.gsp

Area.gsp